obliterate before reaching the clypeus. Fastigium of vertex strongly sloping and forming with the frontal ridge a broad curve ; its surface flat, margins perfectly obliterate. Eyes oval, prominent, distinctly less than twice as high as long; subocular distance distinctly more than length of an eye, but less than its height ; distance between the eyes less than the length of an eye, but distinctly broader than the frontal ridge between the antennæ. Pronotum rounded, somewhat compressed laterally, but scarcely constricted in the prozona ; median keel very low, subobliterate by puncturation. Elytra as in *Valanga*. Hind femora short and fairly thick. Male cerci elongato-triangular, with the apex very slightly incurved. Wings infumate.

This is a very peculiar genus, which forms a sort of connecting-link between the *Acridoderi*, which it remotely resembles in the structure of the head, and the *Valanga*-group of genera, to which it is, no doubt, most closely related. It differs, however, so much from the true *Valanga* in the head, pronotum, and the type of coloration, that I do not hesitate to separate it generically. Only one species is known as yet.

1. *Willemsea bimaculata* (Willemse).

1922. *Orthacanthacris bimaculata*, Willemse, Orthoptera in Nova Guinea, xiii., Zool. 5, p. 720, figs. 8, 9.

I have seen two specimens only, male and female, from Sattelberg, German New Guinea (M.M.).

[To be continued.]

XLVIII.—Ursus anglicus, *a new Species of British Bear.*
By Robert T. Gunther, F.L.S.

[Plates II. & III.]

A lower mandible of this bear was found with other bones about 5 feet below the surface in a pit in the Cherwell gravels, of Pleistocene age, that underlie the Deer Park of Magdalen College. A few of the bones showed scratchings, indicating that they had been rolled along the bed of a fast-flowing stream, but the greater number seem to have belonged to animals that died on the spot or at no great distance away. The bones were found below a well-marked band of recent fresh-water shells, and at about 2 ft. 6 in.

above the upper surface of the Oxford Clay, upon which the gravel rests.

The locality is one where bones have been accumulated in flood-débris at a drinking-place where the Cherwell stream ran clear over a gravel bottom (*cf.* A. H. Church, 'Botanical Memoir,' no. 13, p. 22). Many of them have been penetrated by the roots of the fine elms of Magdalen Grove, one of which, the largest of its kind in Britain, probably owed its gigantic size to the phosphates derived from mammoths' bones.

In February 1922, after many bones from the pit had already been broken up for gravelling a walk leading to the new kitchen-garden, I was able to save a fairly large portion of a mammoth tusk and several molars; but, not realising how annihilating the pickaxe of a really competent digger of gravel can be, I had formed the opinion that in this deposit the bones had for the most part disintegrated, and that teeth only had survived. On the 31st of January last, on hearing that bones had been found, I immediately rushed out, arriving, however, too late to see the remains *in situ*, and found a pile of what appear to be bones of a *Bos primigenius*, stag's horn fragments, many bits of mammoth bones, including parts of two lower jaws and teeth, and, on the top of all, a beautifully preserved ramus, in two pieces, of the lower jaw of a bear. It is in a good state of preservation: only the coronoid process and the incisors being missing (Pl. II. fig. 2).

My friend, Dr. Andrews, of the British Museum, who has superintended the repairing, has given me every facility to examine the jaws of the British Bears in his charge, and, in the kindest way, has informed me as to the recent literature on the subject. Mr. Hinton has also given me access to the bear-skulls in the Zoological Department.

Such of the literature on fossil bears as I have been able to review seems to show that the great range of variation in the characters of the Common Brown Bear, *Ursus arctos*, has caused some writers to include within its limits not only the Grizzly Bear of North America, but also a great number of fragmentary fossilised remains from deposits of different ages.

Owen, for instance, in his 'British Fossil Mammals' included a newly-found Fen Bear in the same species in 1846, and his example has been followed by many authors, including Reynolds, in his 'Monograph on the British Pleistocene Bears,' 1906.

The Magdalen College bear-jaw exhibits characters which are so much more pronounced than the corresponding characters of recent *U. arctos* as to suggest that Ursine science will be better helped by considering it, and similar contemporary Pleistocene remains, as belonging to a separate species related to but distinct from *U. arctos*, a species originally founded by Linnæus for living examples of European Brown Bears.

The jaw is in such an excellent state of preservation—better than that of most recorded remains of fossil Bears—that it merits independent description; and although fractured across the inferior dental canal, the damage has been skilfully repaired in the Geological Department of the British Museum. The condyle and angular region are in perfect condition, as also is the range of molar and premolar teeth, showing all the features upon which systematists have largely relied for their identifications. It has the special interest of being the first bear to be recorded in Oxfordshire, and one of very few that have been found in central England, between the countries of the Fen Bears (Owen, 1842) and those of Kirkdale in the north (Buckland, 1823) and of the bears of Devon and South Wales in the west (Owen, 1846; Busk, 1873).

The jaw is larger than that of any *U. arctos* that we have seen. The firm anchylosis of the symphysis and the well-worn molar teeth show it to have belonged to a full-grown individual, probably a male somewhat past the prime of life. The teeth, shown in Pl. II. figs. 2 & 5, are as follows:—

Incisors missing.

Canine rather more slender than in *U. spelæus*: long diam. at base of crown, 21 mm.; short ditto, 20 mm.

Premolar$_1$ missing, but indicated by a well-defined alveolus.

Premolars$_{2-3}$ absent.

Premolar$_4$ of the *U. arctos* type, without the subsidiary cusps characteristic of the Cave Bear. Two ridges leading from the main cone to the posterior border give the tooth the appearance of the corresponding tooth in a bear named "*U. horribilis*" that was found at Grays (Pl. II. fig. 4), but the inner ridge may be partly the result of wear.

Molars$_{1-2}$ similar to those of allied bears. They show considerable signs of wear.

Molar$_3$ is a tooth of some importance. It is in every way a larger tooth than is found in *arctos, horribilis*, or *fossilis* bears, which have a subtriangular third molar. In the Magdalen College jaw this tooth is subrectangular with a sulcus down the outer side, recalling the *U. spelæus* type of third molar.

The dimensions of the four teeth are :—

	pm_4.	m_1.	m_2.	m_3.
Length	12·5	28	29	25
Width	9·5	15	19·5	19·5

The measures of the lengths of the molars of several fossil Bears are given in the next table of comparative dimensions. A comparison of the length of the molar range with the distance of the canine was found to serve no useful purpose, except to demonstrate the variability of the length of the diastema as compared with the length of the range of molars.

The dimensions of this jaw (in millimetres) as compared with those of a selected series of lower jaws of other bears in the British Museum are :—

	U. anglicus, sp. n. Magdalen College, Oxford.	"*U. horribilis.*" Grays. No. 22029.	"*U. horribilis.*" Kent's Cavern. No. 15922.	"*U. fossilis.*" Goldfuss. 1 (o.c.).
Total length	c. 292	—	—	242 ?
Canine to condyle	275	257 ?	—	230
" " pm_4..................	47	?	51	46
Symphysial area :				
Length......................	83	—	77	69
Width	44	—	40	28
Condyle width	65	—	—	45
Top of condyle to lower side of angle......................	55	50	—	—
Length of molar range :				
m_1+m_2 together..............	56·5	53	—	48
m_3......................	25·5	21	—	20
Length of $m_1+m_2+m_3$	82	74	—	68

In the first place the Oxford jaw may be definitely distinguished from that of the full-grown Cave Bear, *U. spelæus*, on account of its smaller size; of the presence of an alveolus close behind the canine, indicating a first premolar, which with pm_2 and pm_3 is normally absent in Cave Bears; of the absence of cusps on the inner side of pm_4; of the absence of tuberculation on m_3. Moreover, the canine seems slenderer, and the subangular process of the mandible is more pronounced than in *U. spelæus*.

It is when we come to the distinctions between our jaw and those of *U. horribilis* and *U. arctos* that difficulties of finding constant taxonomic characters arise. Several Pleistocene jaws in the British Museum agree with the Oxford jaw in important features. Nearest to it comes the above-mentioned jaw, No. 22029, from the Lower Pleistocene of Grays, in Essex, labelled "*U. horribilis*, Ord." (Pl. II. fig. 4). The development of the subangular process is identical in both (Pl. III. figs. 10 & 11). Similar, too, is the depth and rough sculpturing of the fossa, in which the strong masseter muscle was inserted. The Oxford jaw belonged to a more powerful animal, which is indicated by the size of the condyle, which is 6·5 mm. larger in diameter than in the Grays jaw. The diameters are 24·5 mm. and 18 mm. (Pl. III. figs. 7 & 8). The Grays jaw measures 5 mm. less than the Oxford jaw from the top of the condyle to the ventral side of the angle.

A second jaw, that must be taken into account by reason of the very perfect preservation of the proximal end, is M. 2507, from the Welsh submerged forest in Whitesand Bay, near St. Davids (Pl. II. fig. 1). This has been referred to "*U. arctos*." Though otherwise imperfect, this jaw has the coronoid process and condylar region complete, and of similar proportions to those of the Oxford jaw, but the subangular process is less pronounced (Pl. III. fig. 9, *s*.). The following measurements are striking :—

	Oxford jaw.	Whitesand jaw. (M. 2507).
Condyle to inside of symphysis ..	227 mm.	227 mm.
„ „ near side of m_2	137 „	137 „
„ „ top of coronoid process.	—	94 „
„ „ ventral side of angle ..	55 „	54 „
Depth of mandible between m_2 and m_3........................	61 „	54 „

Although obviously from a slighter-built animal, we suggest the proportions of this jaw as suitable for the restoration of the contour of the damaged coronoid of the Magdalen College specimen (Pl. II. figs. 1 & 2). The subangular process is less strikingly developed.

The jaw has also been compared with that of the type of *U. fossilis*, Goldfuss, from Muggendorf, Franconia (Nov. Act. Acad. Cæs. Leop. Car. x. pt. ii. p. 259, pl. xx. *c*), the measurements of which are given above in the table. This evidently belonged to an animal that was smaller in all respects, with a diastema that is relatively longer than in the Oxford jaw, but of the same proportion as the diastema in the jaw of a recent Brown Bear. The development of the subangle (*s.*) is inconspicuous (Pl. III. fig. 12).

Neither the complete skeleton of the Fen Bear, *U. arctos*, nor any of the other bear-skulls in the Cambridge Museum, which we were able to examine through the courtesy of Prof. Marr and of Dr. Foster Cooper, show the extraordinary development in the thickness of the lower mandible between the angle and the subangle, which is so striking a feature of the Oxford jaw.

We have also referred to the paper of Von Reichenau (Abh. d. Hessisch. Geol. Landesanstalt z. Darmstadt, 1906) and to the excellent summary by Freudenberg (Säugetiere d. älteren Quartärs v. Mittel-Europa, 1914), without, however, finding convincing evidence for referring these British Bears to any Continental species other than the *Ursus arctos*, L., which we think it expedient to divide. It must, however, be mentioned that some of Von Reichenau's figures were taken from fragmentary specimens.

The excellent preservation of the taxonomic characters of this lower mandible, their resemblance to those of some other British Pleistocene bear-remains, and their distinction from those of living *U. arctos* appear valid reasons for the formation of a new species, based on the Magdalen College jaw as the type. For this we propose the name *Ursus anglicus*.

The special features which are suggested by the Oxford and allied jaws as characteristic of this species are: the relatively long tooth-range, including a large subrectangular third molar instead of one of subtriangular outline; no trace of the pm_2 or pm_3, which not infrequently occur in living Brown Bears; an extensive symphysis of great strength; a rounded alveolar border in the diastema, whereas this border is sharp, in fact a "knife-edge," both in living *U. arctos* and in *U. savini* (Andrews, Ann. & Mag. 1922); condyles large and wide; great thickness of bone in the region of the angle and the subangular process, which last is conspicuously prominent.

In this species we should also include the Essex Bear from Grays, B.M. No. 22029, and No. 858 in the College of Surgeons, both hitherto named *U. horribilis*. The "*U. arctos*," B.M. No. M. 2507, a less powerful bear, merits further consideration.

If subsequent materials should indicate the former existence of different local races, I would name the one, of which the Oxford jaw is the type, *Ursus anglicus magdalenensis*, in honour of the College within whose walls it was excavated, and of whose foundation I have been a member for more than a third of a century.

EXPLANATION OF THE PLATES.

Plate II.

Lower jaws of Pleistocene bears.

Fig. 1. Jaw from Whitesand Bay, referred to "*Ursus arctos.*"
Fig. 2. ,, Magdalen College, ,, *U. anglicus*, sp. n.
Fig. 3. Molar range of Whitesand Bear, "*U. arctos.*"
Fig. 4. ,, ,, Grays ,, "*U. horribilis.*"
Fig. 5. ,, ,, Magdalen ,, *U. anglicus*, sp. n.

Plate III.

Fig. 6. Condyle and angle from behind, Whitesand Bear.
Fig. 7. ,, ,, ,, Grays Bear.
Fig. 8. ,, ,, ,, Magdalen Bear.
Fig. 9. Angle and subangle from below, Whitesand Bear.
Fig. 10. ,, ,, ,, Grays Bear.
Fig. 11. ,, ,, ,, Magdalen Bear.
Fig. 12. ,, ,, ,, *U. fossilis*, Goldfuss.

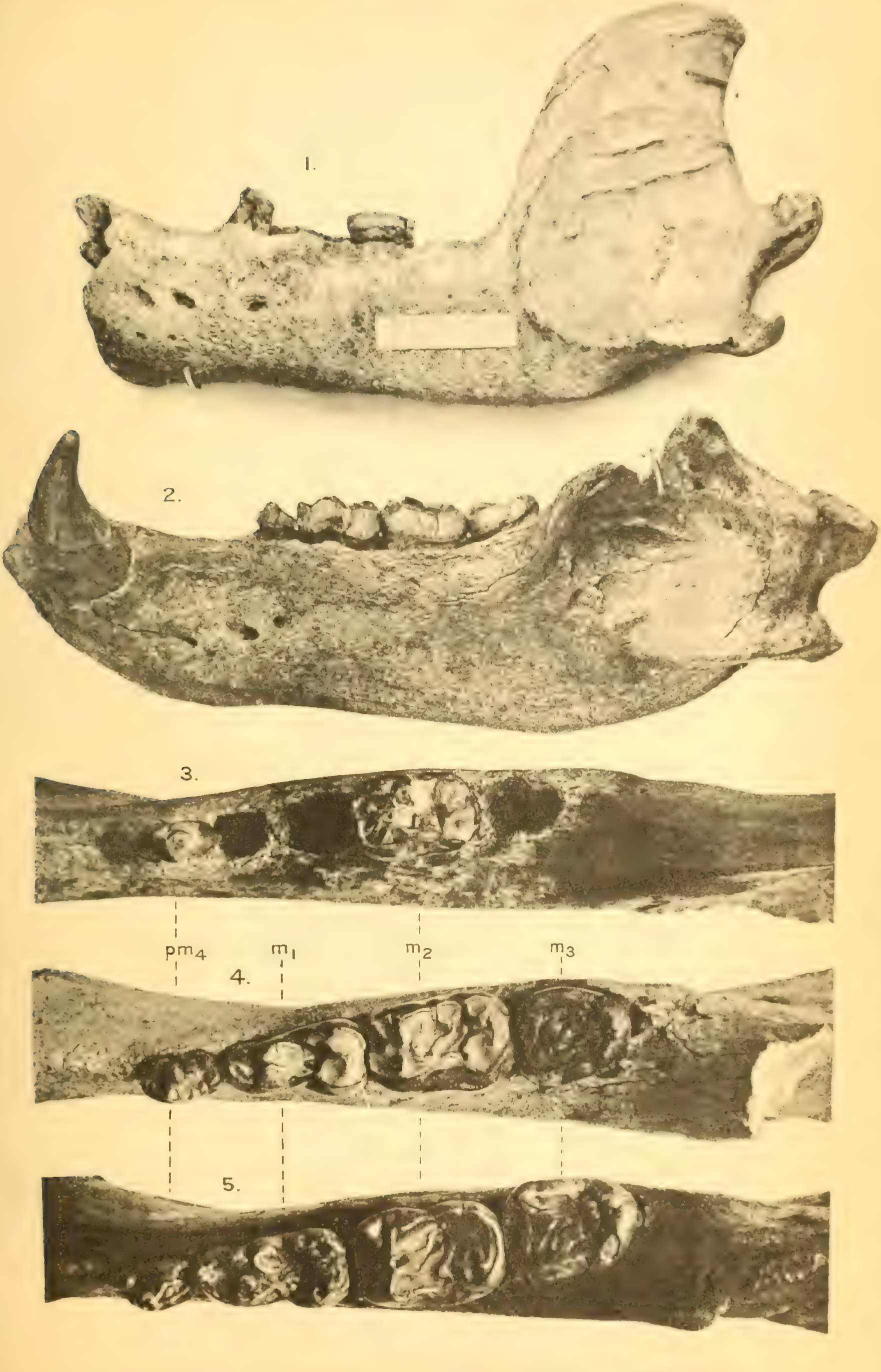
a., angle of jaw; *s.*, subangle of jaw; *c.*, condyle of jaw.

XLIX.—*Notes on some British and North African Specimens of* Apus cancriformis, *Schaeffer*. By Robert Gurney, M.A., F.L.S.

Before proceeding to the subject of this communication, it is unfortunately necessary for me to defend the use of the name *Apus* for a genus of Crustacea.

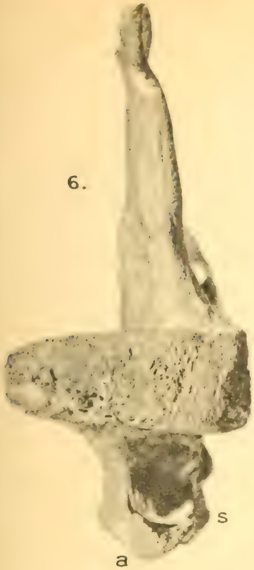
This name has been used for generations as the generic name of the Branchiopod Crustacean *Apus cancriformis*, which, from its extreme morphological importance, has figured largely in zoological literature. For this reason, its suppression by systematists, on the ground that its use is not in accordance with the International Rules of Nomenclature, will certainly not be agreed to by writers on general zoological problems, who will no doubt continue to refer to this animal as *Apus cancriformis*. It can scarcely be to the advantage of Zoology that, in this as in many other instances since these Rules came into force, the biologist and the systematist should adopt different systems of nomenclature.

In my opinion, names long in *general* use should not be changed or suppressed, except for the most cogent reasons and in cases where there is obvious ambiguity. In this case



1, 3 'URSUS ARCTOS'. 2, 4, 5 URSUS ANGLICUS.

6.



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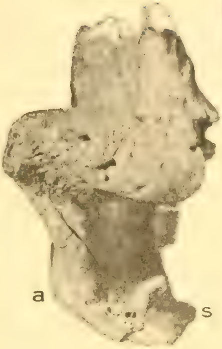

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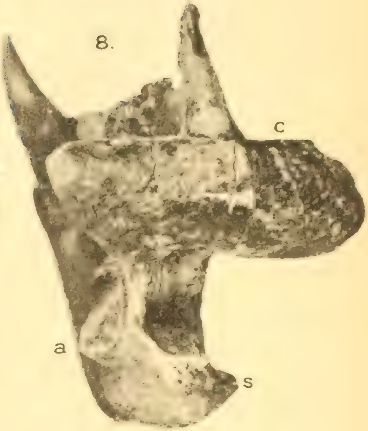

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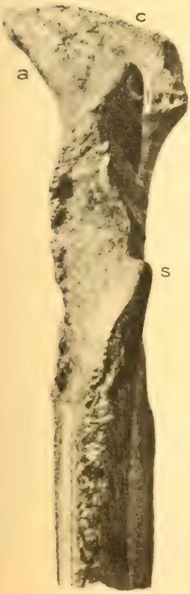

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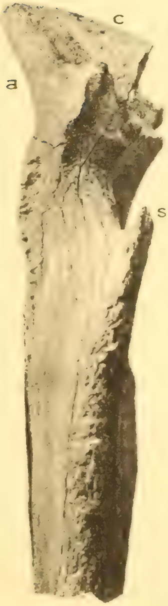

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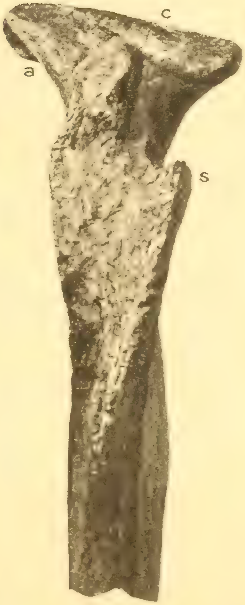

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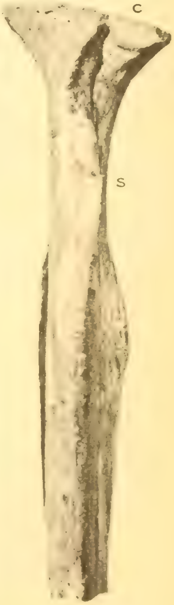

6, 9. 'URSUS ARCTOS'. 7, 8, 10, 11. URSUS ANGLICUS.
12. URSUS FOSSILIS.